DOCUMENT RESUME

ED 354 073 PS 021 071

AUTHOR Bergan, John R.
TITLE Path-Referenced Assessment in the Service of Teaching and Learning: The Role of Assessment in Home, Preschool, and School Initiatives To Promote an Effective Transition to Elementary School.
REPORT NO TAC-B-299
PUB DATE [91]
NOTE 9p.
PUB TYPE Guides - Non-Classroom Use (055) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Classroom Observation Techniques; *Developmental Programs; Developmental Stages; Early Childhood Education; Interpersonal Competence; Kindergarten Children; *Measurement Techniques; Preschool Children; *School Readiness; Student Development; *Student Evaluation; Thinking Skills
IDENTIFIERS Developmentally Appropriate Programs; *Measurement and Planning System Scales; *Path Referenced Tests; Project Head Start; Scales

ABSTRACT

The transition to elementary school spans several years in a child's life. For children to progress during this critical period, they must have learning opportunities that are appropriate to their changing developmental levels. Unfortunately, measurement technology that currently dominates assessment practice does not lend itself well to the task of promoting development. Assessment instruments designed to serve teaching and learning initiatives must meet three criteria: they must assess children's abilities, they must be capable of reflecting development during the long transition period, and they must provide information that can be used to plan developmentally appropriate learning opportunities. Norm-referenced and criterion-referenced achievement tests do not meet these criteria. However, the path-referenced approach provides developmental information by referencing a child's performance to a position on a path of development. The Measurement and Planning System, a measurement based on the path-referenced approach, emphasizes social competence, higher order thinking skills, and includes empirically validated developmental progressions that reflect a movement from simple to more complex forms of knowledge. In the 1987-1988 program year, the Ford Foundation allocated funding for a series of studies to examine the role of the Measurement and Planning System in facilitating the transition of Head Start children to the elementary school. The studies found that the Measurement and Planning System in kindergarten had a positive effect on ability during kindergarten. (Contains 23 references.) (MM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☒ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

TAC B-299

ED354073

Path-Referenced Assessment in the Service of Teaching and Learning: The Role of Assessment in Home, Preschool, and School Initiatives to Promote an Effective Transition to Elementary School

John R. Bergan
The University of Arizona

The transition to elementary school covers a period spanning several years in children's lives. During this period, children encounter a rapidly changing educational environment imposing a vast array of new expectations and challenges that have profound effects on their future development. In order for children to progress during this critical period, they must have learning opportunities that are appropriate to their changing developmental levels. There is now wide recognition that assessment in the service of teaching and learning can play an important role in assisting socializing agents to provide appropriate learning opportunities to promote children's development (e.g., National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments of Education, 1991). Unfortunately, measurement technology that currently dominates assessment practice does not lend itself well to the task of promoting development. Norm-referenced instruments, which describe children's performance in terms of position in a norm group provide no information about a child's developmental level (Bergan & Feld, 1991). Similarly, criterion-referenced instruments, which describe performance in terms of the mastery of instructional objectives, offer no information about development. This paper describes transition research involving an approach to assessment in the service of teaching and learning using path-referenced assessment (Bergan, 1981; Bergan, Stone, & Feld, 1985; Bergan & Feld, 1991). The path-referenced approach provides developmental information by referencing children's performance to position on a path of development.

The Need for a New Approach to Assessment

Assessment instruments designed to serve teaching and learning initiatives must meet three criteria: First, they must assess children's abilities, not merely performance on specific test items. Second, they must be capable of reflecting development during the long transition period. More specifically, they must reveal the ordered progression of capabilities reflecting changes in children's level of ability. Finally, they must provide information that can be used by parents and teachers to plan developmentally appropriate learning opportunities to promote children's growth.

Norm-referenced and criterion-referenced achievement tests typically used to evaluate achievement do not meet these criteria. Norm-referenced instruments claim to assess ability rather than performance on specific test items. However, when these tests are used as barometers of instructional effects, there is serious doubt that they do measure ability. Under increasing pressure to raise test scores, teachers have aligned the curriculum to the tests (e.g., Mehrens & Kaminski, 1989). As a result, school systems across the country are reporting test results above the national average. This state of affairs has come to be known as the Lake Wobegon effect, in reference to Garrison Keillor's mythical midwestern community where all of the children are above average. The Lake Wobegon effect has caused many scholars to question whether standardized test scores reflect ability or merely the efforts of teachers to prepare students to pass specific test items (Haladyna, Nolan, & Haas, 1991; Mehrens & Kaminski, 1989). Concern that achievement tests are not reflecting abilities has been accompanied by growing recognition that assessment instruments should be designed to test what is taught (Cohen & Hyman, 1991; Frederiksen & Collins, 1989; Keating, Nickerson, 1989; Sternberg, 1990). This view has been supported by the Department of Education (National Goals of Education, 1990) and by the National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments of Education (1991). These organizations have published guidelines calling for a ban on standardized testing prior to the third grade.

Criterion-referenced assessment has long been regarded as the procedure of choice for assessment

PS 021071

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
John Bergan
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

Biographical Sketch

John R. Bergan

Dr. Bergan is Professor of Educational Psychology and Director of the Center for Educational Evaluation and Measurement at the University of Arizona. He is also President of Assessment Technology Incorporated. He received his A.B. in Psychology and Music from Kalamazoo College, his M.A. in Clinical Psychology from Wayne State University, and his Ph.D. in Education and Psychology from the University of Michigan. He is the author of over 70 publications including books, chapters, and journal articles focusing on measurement and consultation-based interventions related to the cognitive and social development of young children. In addition, he has directed the development of the **Head Start Measures Battery** and the **MAPS Assessment Scales**, which assess young children's development.

initiatives in the service of teaching and learning. Unfortunately, the anticipated benefits of linking assessment to teaching have not been fulfilled by the criterion-referenced approach. A major shortcoming of criterion-referenced technology is that provides no way to reveal the influence of instruction on children's abilities. Criterion-referenced assessment has its origins in behavioral psychology, a theoretical perspective that affords no explanatory role to the concept of ability (Bergan, 1990). Criterion-referenced test scores indicate the mastery of specific instructional objectives, not the development of abilities. Not surprisingly, teachers using criterion-referenced assessment focus on the teaching of isolated facts and skills rather than abilities (Cole, 1990). As a result, critical thinking, problem solving, and other higher order thinking activities have often been ignored (Cole, 1990).

Perhaps the most serious problem arising from the isolated view of knowledge inherent in criterion-referenced assessment is the failure of the approach to measure the child's developing knowledge. The original conception of criterion-referenced assessment called for the assessment of ordered progressions of skills reflecting increasingly complex forms of knowledge (Glaser, 1963). However, this conception has had little impact on the criterion-referenced assessment devices in use today (Cole, 1990). The existing measures, including those that claim to be developmental in character, tend to be composed of loosely related items that do not reflect a coherent developmental structure. As a result, these instruments provide no information on the kinds of knowledge and skills that are developmentally appropriate for the child.

One consequence of the failure to adopt a developmental approach to assessment is that children are exposed to knowledge and skills far above their developmental levels. Schools under pressure to raise test scores attempt to increase achievement by teaching skills far in advance of the developmental levels of the children (Shepard & Smith, 1988). The outcome is needless frustration and failure. All too frequently the response of the schools is not to change the curriculum. Rather, it is to assert that the child is not ready for the curriculum. The perceived lack of readiness eventuates in educational tracking or retention in grade (National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments of Education, 1991; Smith & Shepard, 1988). A second outcome of the lack of a developmental approach is that children are confronted with learning opportunities well below their developmental levels. When criterion-referenced instruments are used for accountability purposes, there is pressure to construct assessment instruments below the developmental level of the majority of children (Kirst, 1991). This makes the school "look good" in that most of the children master a high proportion of the objectives assessed (Kirst, 1991). Unfortunately, it also deprives children of their right to learn.

Path-Referenced Assessment in the Service of Teaching and Learning

Path-referenced assessment is designed to assist teachers and parents to provide children with learning environments consistent with their developmental needs and learning interests. We have used the path-referenced approach to develop a measurement and planning system to promote children's development during the transition period (Bergan, Sladeczek, Schwarz, & Smith, in press). The system contains assessment instruments, planning tools, and learning activities that link the planning and implementation of learning opportunities to assessment information indicating children's current abilities and readiness to acquire new knowledge and skills. It also includes optical scanning, database management, statistical analysis, and reporting capabilities that make it possible to chart the accomplishments of large numbers of children.

Emphasis on Social Competence

The *Measurement and Planning System* covers seven content areas: language, math, nature and science, perception, reading, social development, and fine and gross motor development. The scales are designed to assess abilities in ways that recognize the use of knowledge in a social context. For example, the language scale taps the child's ability to understand and communicate effectively with others. The math scale assesses math skills in everyday living situations. The nature and science scale assesses sensitivity to the ecological

interdependence of living things. The perception scale assesses perspective taking, focusing on the child's ability to recognize the ways in which other individuals may perceive their environments. The reading scale assesses reading occurring in everyday living, and the child's understanding of people's behavior, motives, and feelings expressed in story contexts. The social development scale assesses the social problem solving skills and social responsibility. The child's understanding of the feelings of others, helping and sharing, fairness, and friendship are included in this scale. The fine and gross motor scale assesses physical competence, which is a recognized component of social competence.

Emphasis on Higher Order Thinking Skills

The scales included in the *Measurement and Planning System* emphasize problem solving and other higher order thinking skills rather than rote facts. For example, the math scale assesses the child's ability to use knowledge of number to solve problems. The nature and science scale assesses the ability to make inferences and predictions from observations. The reading scale assesses causal and inferential reasoning in story contexts. The social development scale assesses social problem solving involving the child's understanding of the causes and predicted outcomes associated with feelings and social interactions.

Developmental Character of the Scales

All of the scales in the system include empirically validated developmental progressions that reflect a movement from simple to more complex forms of knowledge (Bergan & Stone, 1985; Bergan, 1988). The scales provide a developmental level (DL) score relating the child's developmental level directly to his or her location on a path of development. Path location indicates the knowledge and skills that the child has learned, is ready to learn now, and will be ready to learn later on. This developmental perspective provides a positive assessment of the child's accomplishments that points the way toward future growth. Every child can take pride in what has already been learned, and every child can look forward to the growth that lies ahead. The developmental perspective links skills into larger knowledge structures (e.g., Bergan & Feld, 1991). For example, in social development, individual helping and sharing skills are linked to a larger knowledge structure called helping and sharing. The focus of teaching is on these larger structures, not on isolated skills and facts (Bergan & Feld, 1991; Bergan et al., in press). Teachers and parents using developmental structure relate simple forms of knowledge (e.g., knowing how to share) to more complex forms of knowledge (e.g., recognizing when to share). For example, they can explore the level of a child's knowledge of helping and sharing given adult support and the child's knowledge of helping and sharing in the absence of adult assistance (Vygotsky, 1978).

Alternative Approaches to Assessment

If assessment is to serve the needs of children, it must be a dynamic, collaborative enterprise involving input from parents, educators, the scientific community, and the developers of assessment instruments. The construction of the *Measurement and Planning System* utilized input from teachers, parents, and child development experts. Moreover, an ongoing research and development program has supported the generation of alternative approaches to assessment based on the expressed needs of early childhood programs.

The first instrument constructed for the system was the *Head Start Measures Battery* (*HSMB*). The *HSMB* is individually administered and includes items calling for extended child responses. The second set of instruments developed for the system were the *MAPS-P2 Scales*. The *MAPS-P2 Scales* can be administered in small groups as well as individually in learning centers in the classroom. Thus, *MAPS-P2* is useful for assessing the skills of children whose knowledge might be underestimated by an examination requiring an extended response. The third set of instruments, the *MAPS-C Scales*, are performance-based observation scales, which assess knowledge and skills as part of ongoing activities in the classroom. The final set of instruments,the *MAPS-K Scales*, provide a developmental approach to the assessment of kindergarten children

consistent with the instruments developed for use in preschool.

Planning Tools

Assessment for in the service of teaching and learning requires continuous observation. Each of the above assessment alternatives is designed for use with observational data recorded on the *Classroom Development Profile and Planning Guide*. The guide summarizes assessment results for a class, provides a continuous record of progress, and offers planning suggestions for each child. In addition, it can be optically scanned to produce developmental level scores for reports documenting children's accomplishments. The *Individual Development Profile* gives parents assessment information about a child's development that can be used to provide an enriched learning environment at home and serves as a basis for developing individual educational plans during home visits and parent conferences. The *Classroom Activity Library* provides learning activities directly linked to skills assessed by path-referenced measures. The activities help teachers to include children at different developmental levels in the same activity while meeting their individual learning needs. *Times for Learning* is an activity guide for parents. It assists parents to enhance development by take advantage of learning opportunities that occur in the course of everyday living.

The Measurement and Planning System and Transition to School

The transition between preschool and elementary school is a period of critical importance with respect to school readiness. In the 1987-1988 program year, the Administration for Children, Youth, and Families the Ford Foundation allocated funding for a series of studies to examine the role of the *Measurement and Planning System* in facilitating the transition of Head Start children to the elementary school.

Enhancing Kindergarten Success

The first transition study examined the effects of the measurement and planning system on kindergarten children's cognitive development, and on promotion and referral to special education (Bergan et al., in press). Analyses of effects on cognitive development indicated that kindergarten teachers who implemented the system assisted children to achieve significantly higher abilities in math, reading, and science than a randomly selected control group. System implementation influenced promotion through its effects on cognitive development. Moreover, implementation had a marked effect on special education placement. In classrooms implementing the system, only 1 child in 71 was placed in special education. Approximately 1 child in 5 in the control condition was placed.

Promoting Effective Parent Involvement in Children's Learning

The second transition study examined the effects of a consultation program assisting parents to promote their children's development (Bergan, Reddy, Sladeczek, & Schwarz, 1991). A consultative problem solving approach (Bergan & Kratochwill, 1990) was used in conjunction with the measurement and planning system and *Times for Learning* to assist parents to establish learning goals and to provide learning opportunities for children in the course of everyday family living experiences. Consultation was shown to influence development, to be inexpensive, to make minimal demands on parents, and to be easily adapted to the busy schedules of contemporary families.

Promoting Continuity in Educational Programming

The third transition study addressed three issues related to the period of transition from Head Start through kindergarten (Feld, Sladeczek, Bergan, Schwarz, & Reddy, 1991). The first involved the mechanisms by which Head Start affects children's immediate and subsequent cognitive development during kindergarten. The second involved continuity in educational programming between Head Start and kindergarten. The third involved the mechanisms by which early cognitive skill acquisition affects subsequent learning.

The community study revealed that Head Start had a direct beneficial influence on children's cognitive ability at the time of entrance into kindergarten. Implementation of the *Measurement and Planning System* in kindergarten had a positive effect on ability during kindergarten. Head Start influenced ability at the end of kindergarten indirectly through its effects on abilities acquired during Head Start.

References

Bergan, J. R. (1981). Path referenced assessment in school psychology. In T.R. Kratochwill (Ed.), *Advances in school psychology* (2nd Ed.), (Vol. 1), (pp. 255-280). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Bergan, J. R. (1988). Latent variable techniques for measuring development. In R. Langeheine & J. Rost (Eds.), *Latent trait and latent class models* (pp. 233-261). New York and London: Plenum Press.

Bergan, J. R. (1990). Contributions of behavioral psychology to school psychology. In T.B. Gutkin & C. R. Reynolds (Eds.), *The Handbook of School Psychology*, (2nd Ed.) (pp. 126-142). New York: John Wiley & Sons.

Bergan, J. R., & Feld, J. K. (June, 1991). *Measuring the abilities of Head Start children: Past accomplishments and future challenges.* Paper presented at the national working conference "New Directions in Child and Family Research: Shaping Head Start in the Nineties", sponsored by the Administration for Children, Youth, and Families, The National Council of Jewish Women, and the Society for Research in Child Development, Arlington, VA.

Bergan, J. R., Reddy, L. A., Feld, J.K., Sladeczek, I. E., & Schwarz, R. D. (August, 1991). *Parent consultation, school socioeconomic status, and summer learning.* Paper presented at the annual meeting of the American Psychological Association, San Francisco, CA.

Bergan, J. R., Sladeczek, I. E., Schwarz, R. D., & Smith, A. N. (in press). Effects of a measurement and planning system on cognitive development and educational programming for kindergarten children. *American Educational Research Journal.*

Bergan, J. R., & Stone, C. A. (1985). Latent class models for knowledge domains. *Psychological Bulletin, 98,* 166-184.

Bergan, J. R., Stone, C. A., & Feld, J. K. (1985). Path-referenced assessment of individual differences. In C. R. Reynolds & V. L. Wilson (Eds.), *Methodological and statistical advances in the study of individual differences* (pp. 425-466). New York and London: Plenum Press.

Cohen S. A., & Hyman, J. S. (1991). Can fantasies become facts? *Educational Measurement, 10,* 20-23.

Cole, N. S. (1990). Conceptions of educational achievement. *Educational Researcher, 19,* 2-7.

Feld, J. K., Sladeczek, I. E., Bergan, J. R., Schwarz, R. D., & Reddy, L. A. (1991). *Mechanisms by which Head Start, a measurement and planning system, and cognitive ability promote and sustain children's learning.* Report submitted to the Ford Foundation, Tucson, Arizona: University of Arizona.

Frederiksen, J. R., & Collins, A. (1989). *Educational Researcher, 18,* 27-32.

Glaser, R. (1963). Instructional technology and the measurement of learning outcomes: Some questions. *American Psychologist, 18,* 519-521.

Haladyna, T. M., Nolan, S. B., & Haas, N. S. (1991). Raising standardized achievement test scores and the origins of test score pollution. *Educational Researcher, 20,* 2-7.

Keating, D. P. (1990). Charting pathways to the development of expertise. *Educational Psychologist, 25,* 243-268.

Kirst, M. W. Interview on assessment issues with James Popham (1991). *Educational Researcher, 20,* 24-27.

Mehrens, W. A., & Kaminski, J. (1989). Methods for improving standardized test scores: Fruitful, fruitless or fraudulent? *Educational Measurement Issues and Practice, 8,* 14-22.

National Goals for Education. (1990). United States Department of Education, Washington, D.C.

National Association for the Education of Young Children & National Association of Early Childhood Specialists in State Departments of Education (1991). Guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. *Young Children, 46,* 21-39.

Nickerson, R. S. (1989). New directions in educational assessment. *Educational Researcher, 18,* 3-7.

Shepard, L. A., & Smith, M. L. (1988). Escalating academic demand in kindergarten: Some nonsolutions. *Elementary School Journal, 89(2),* 135-146.

Sternberg, R. J. (1990). T & T is an explosive combination: Technology and Testing. *Educational Psychologist, 25,* 201-222.

Vygotsky, L. S. (1978). *Mind in society: The development of psychological processes.* Cambridge, MA: Harvard University Press.

Criteria for Assessment Instruments Designed to Serve Teaching and Learning

Assessment instruments designed to serve teaching and learning initiatives must assess children's abilities, not merely performance on specific test items. Adherence to this criterion minimizes the likelihood that instruction will produce trivial results.

Tests must provide information about children's capability to perform tasks beyond the specific test items included in the assessment.

The ability or abilities assessed must be specified in sufficient detail so that it is possible to determine the kinds of tasks that they include.

Empirical evidence must be provided that the tasks included on a test reflect the ability or abilities that they are assumed to measure.

The assessment of ability must not be compromised by initiatives to align instruction to the abilities being assessed. Given appropriate guidelines, teaching to the test should be encouraged.

There must be a direct link between curriculum and assessment. The types of knowledge and skills included in an ability dimension being assessed must be clearly delineated and directly related to curriculum.

Instruments assessing ability must be capable of reflecting development. In the absence of this criterion, the ability to provide developmentally appropriate learning opportunities for children is seriously compromised.

Assessment instruments must reveal ordered progressions of capabilities reflecting changes in children's level of ability.

The progression of capabilities assessed must be empirically validated.